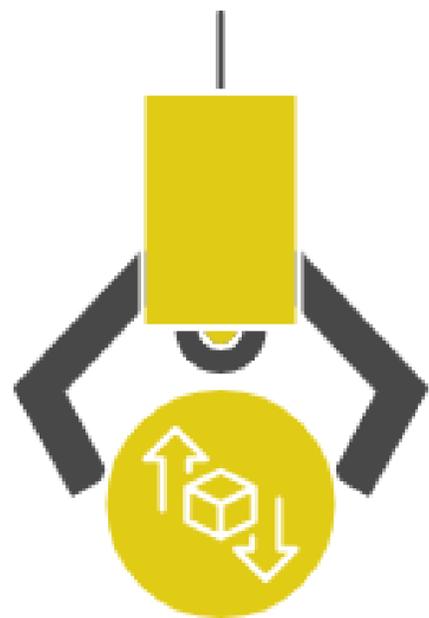Digitalization of Port Operations:

DIGITAL TRANSFORMATION AND PORT PERFORMANCE

Innovation

PMAWCA Secretariat's is working towards becoming the information hub for the enhancement of performance and environmental care for decision makers in the Maritime Industry of West and Central Africa
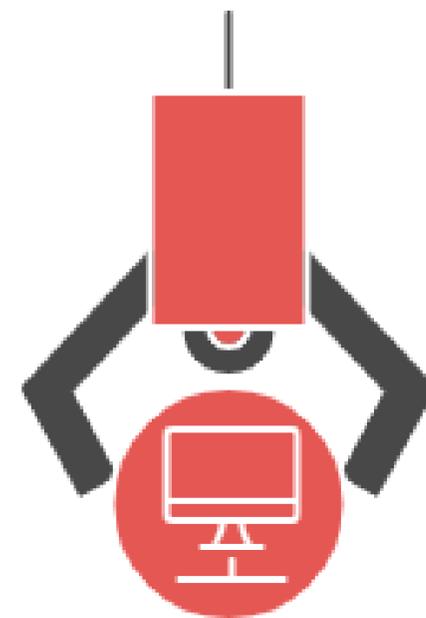
A. CURRENT STATE OF AFFAIRS

IPCOEA
Improving port customs and operations efficiency in Africa.
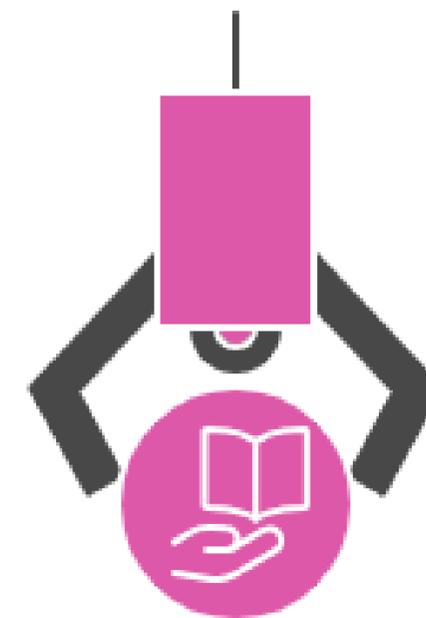
Sustainable Ports
Partnership focused on sustainable port development.

Port Statistics
Building and managing a database for port statistics.
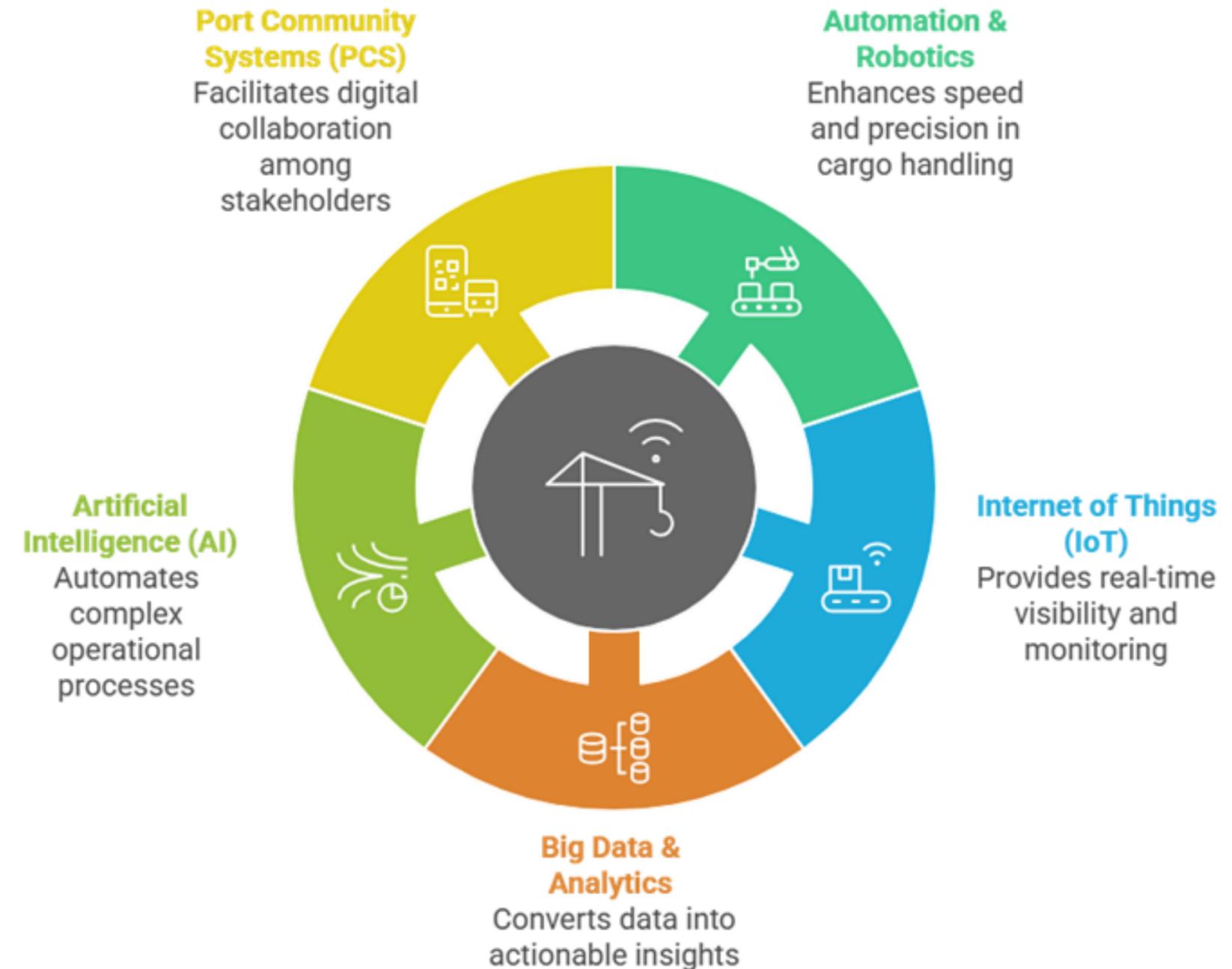
Knowledge Sharing
Sharing knowledge and best practices in port management.

B. CHALLENGES

| Category	Description of the Challenge
Technical	Building and maintaining a comprehensive and secure digital portal for managing strategic performance and environmental information, hosted locally at PMAWCA headquarters in Lagos.
Skills	Training all relevant stakeholders to manage the portal effectively, including data collection, data analysis, database management, web maintenance, and information management.
Financing	Securing funding for environmental monitoring equipment in ports, capacity-building programs, and awareness campaigns.
Legal & Compliance	Advocating for regional laws and policies that support data sharing among landlord ports in West and Central Africa.

Key Enabling Technologies

Smart ports rely on five core technologies: automation and robotics to speed up cargo handling; IoT sensors to provide real-time visibility across equipment and operations; big data analytics to predict congestion and optimize planning; artificial intelligence to automate decisions and enable predictive maintenance; and Port Community Systems to ensure seamless data exchange between all stakeholders. Together, these technologies create faster, safer, and more efficient port ecosystems.

Port Community Systems (PCS)
Facilitates digital collaboration among stakeholders

Automation & Robotics
Enhances speed and precision in cargo handling

Artificial Intelligence (AI)
Automates complex operational processes

Internet of Things (IoT)
Provides real-time visibility and monitoring

Big Data & Analytics
Converts data into actionable insights

Benchmark of Leading Digital Ports

Tema leads with strong automation and smart gate systems. Lomé stands out as a high-performance transshipment hub with real-time digital coordination. Abidjan advances through IoT-enabled equipment and an upgraded TOS. Dakar improves transparency and cargo flow through its PCS and smart gate functions.

Digitalization Benchmark – West & Central African Ports
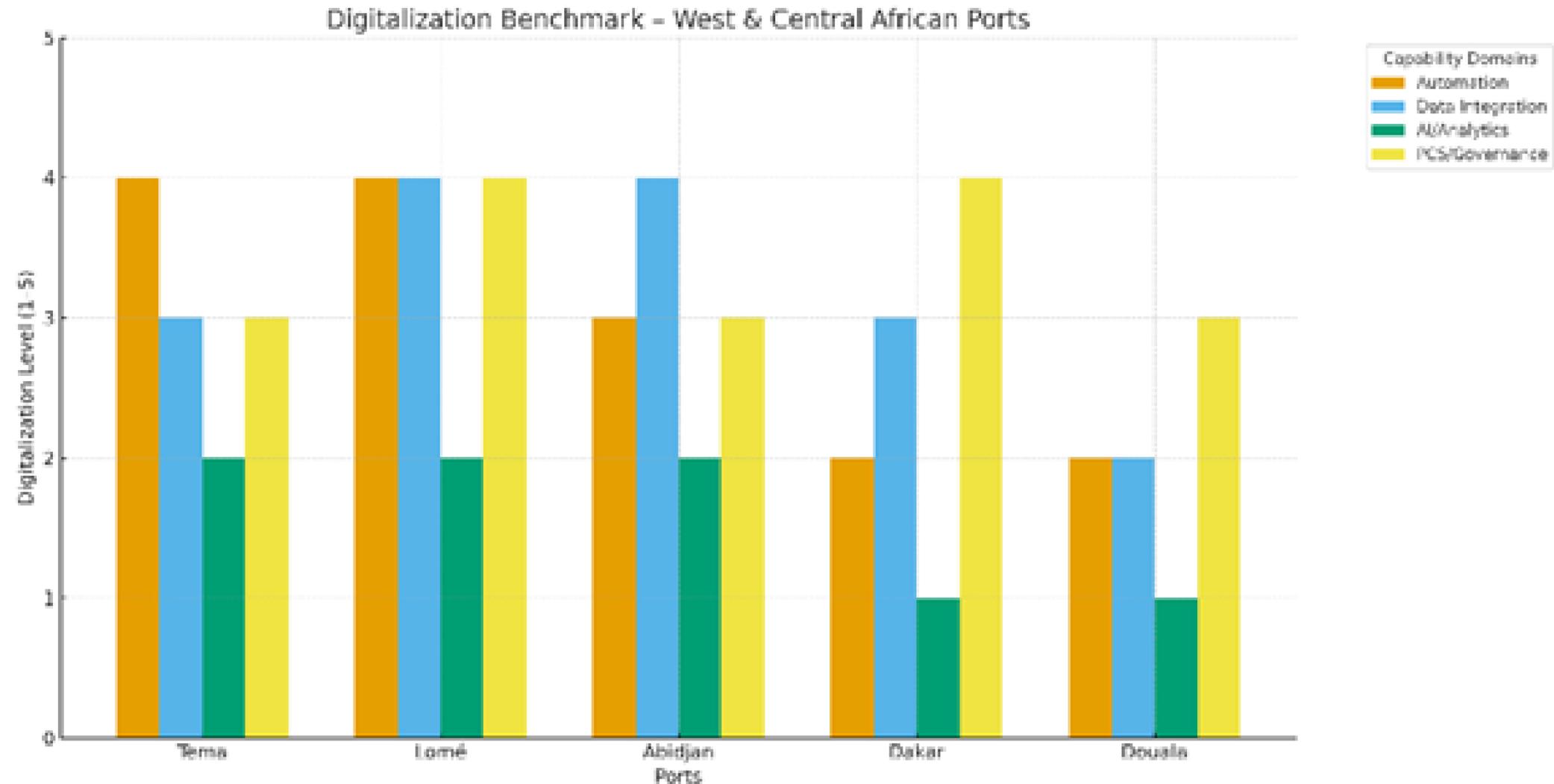
Conclusion

PMAWCA's initiatives clearly demonstrate the region's commitment to modernizing port operations, strengthening environmental performance, and promoting data-driven management. Important progress has been made through digitalization, benchmarking tools, and the development of a unified port statistics system. Although challenges remain in terms of technology, skills, financing, and legal frameworks, the foundations for stronger, more efficient, and more sustainable ports are already in place. Continued collaboration and investment will be essential to achieving PMAWCA's long-term vision.